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Observation of a Sequence of Declining Outbursts from GX339-4

Brad Rubin, T. Mihara (Riken), B.A. Harmon, G.J. Fishman (NASA MSFC), W.S. Paciesas (U, of Alabama in Huntsville), C. Robinson, N.S. Zhang (USRA NASA MSFC)

Between August 1988 and November 1996, ten outbursts in x-ray wavelengths of the black hole candidate GX339-4 were observed. The first three of these outbursts were observed by the GINGA All Sky Monitor and the last eight by BATSE on CGRO. During the first of these outbursts, which was the brightest of them, GX339-4 was observed to be in the very high state, the only time it has ever been observed in that state. The subsequent outbursts show a declining pattern in fluence or total energy release, as well as a shortening of the time between outbursts, so that a correlation exists between the fluence of any given outburst and the time elapsed since the end of the previous outburst. It is likely that this outburst pattern was initiated by the first, strong outburst, which was itself preceded by a long (at least 1.5 year) quiescent interval. Standard time dependent accretion disk theory can be used to analyze this outburst sequence as being related to changes which occur in the viscous timescale of the disk, independent of the instabilit(ies) responsible for the outbursts. Here we will present the x-ray lightcurves, evidence for the correlation described, and discuss the relevant disk physics.